

4.12 MILITARY INSTALLATIONS

Military installations have created some of the nation's largest and most complex environmental contamination problems. Executive Order No. 12580, adopted in 1987, directs all federal facilities to investigate and remediate areas of environmental contamination. As a result, the U.S. Department of Defense (DOD) has assumed responsibility for investigation and remediation at military installations.

The Regional Board is actively involved in investigation and remedial activities at military installations, including seven active military sites, one recently closed site, and six formerly used defense sites. All but two of these installations are in the South Basin and include three of the world's largest bases. Following are lists of active military bases in the Lahontan Region with one noted as being recently closed. (These lists are current as of 1994).

South Lahontan Basin:

Fort Irwin National Training Center
George Air Force Base (closed)
Edwards Air Force Base
Air Force Plant #42, Palmdale
Marine Corp Logistics Base, Barstow
China Lake Naval Air Weapons Station

North Lahontan Basin:

Sierra Army Depot
Marine Corps Mountain Warfare Training Center

The operations of the above military installations for the past 60 years have yielded hazardous substance releases that have degraded water quality within, and in some cases, outside of base properties. The manner in which these hazardous substances were handled was, in fact, common practice at all federal facilities across the nation during this time. As a result of past waste disposal practices, spills, and inadequate regulations, the military installations have created significant water quality problems.

Adverse impacts to water quality can result from discharge of petroleum hydrocarbons, heavy metals, solvents, acids and alkalis, landfill leachate, explosive organic compounds, and low-level radionuclides. These pollutants originate from the following sources:

- gas stations

- fuel pipelines
- stormwater retention basins
- contaminated wells
- fire training facilities
- evaporation ponds
- target ranges
- waste piles
- washwater/solvent catchment basins
- storage tanks (above and underground)
- waste disposal sites (solid, hazardous, pesticides, munitions, low-grade radioactive)

These releases have created substantial soil, surface water, and ground water contamination affecting or threatening to affect wildlife and aquatic habitats and causing domestic wells to be abandoned.

Control Measures for Military Installations

The Regional Board has the regulatory responsibility under the federal Clean Water Act and the California Water Code to protect water quality on federal property in the State, including military installations. Past control measures on bases included adoption of waste discharge requirements (WDRs) for discharges related to storm runoff, construction activities, and municipal wastewater treatment facilities. The WDRs included surface and ground water discharge limitations for water quality parameters such as nutrients, turbidity, pH, taste, odor, temperature and algal growth, as well as BMPs to prevent discharge of waste earthen materials. Other control measures by the Regional Board have been to review and regulate military base compliance in detecting and removing leaking underground storage tanks, uncovering and eliminating toxic pits, and issuance of Cleanup and Abatement Orders or other actions to remediate polluted ground water.

The State of California entered into a Memorandum of Agreement (DSMOA) with the DOD that identified 92 federal facilities within California for site remediation. The purpose of site remediation is to characterize and remove hazardous pollutants that pose a potential or actual threat to human health and/or the environment. Upon completion of site remediation, the facilities may be available for unrestricted use. The DSMOA acknowledges the State's role for providing oversight of the site remediation and provides for the State to receive payment for its oversight costs.

At military installations where water quality is

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threatened due to the release of hazardous substances, both the Regional Board and the Department of Toxic Substances Control (DTSC) have overlapping jurisdiction to order cleanup of sites. A Memorandum of Understanding (MOU) was executed in 1990 between the DTSC, the State Water Resources Control Board, and the Regional Boards, which specified each agency's responsibilities in hazardous waste site cleanup. Under that MOU, the Regional Board retained lead responsibility for certain cleanup operations at military installations. Subsequently, in 1994, the Secretary of Cal/EPA designated DTSC as the lead agency for all DSMOA military installations in California. DTSC is now responsible for coordinating cleanup activities and for ensuring that the Regional Boards' concerns regarding water quality issues are addressed. The Regional Board remains the state lead agency for regulation of active sites permitted by WDRs (such as landfills and sewage treatment plants), cleanup of leaking underground storage tank sites, and other programs mandated by the federal Clean Water Act.

Recognizing that a large number of federal facilities have been contaminated by hazardous substances which may pose a risk to human health and the environment, Congress has passed many acts to provide funding, regulations, and guidelines for site cleanup.

Installation Restoration Program

The Department of Defense (DOD) developed the Installation Restoration Program (IRP) to comply with the federal Resource Conservation and Recovery Act (RCRA) of 1976. (RCRA required federal agencies to comply with local and state environmental regulations concerning waste disposal practices at federal facilities.) The objective of the IRP is to assess hazardous waste disposal and spill sites at military installations and to develop remedial actions consistent with the National Contingency Plan (NCP) for those sites which pose a threat to human health and the environment. The IRP is the DOD's primary mechanism for response actions at all military installations.

Federal "Superfund" Program (CERCLA)

The federal "Superfund" program was established in 1980 with the passage of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). The CERCLA provided

funding and guidelines for the cleanup of the most threatening hazardous waste sites in the nation. High priority sites scheduled for cleanup under this program are placed on the National Priority List (NPL). In California, a large number of federal facilities have been placed on the NPL; a significant proportion of these are military installations.

As of 1994, three federal facilities within the Lahontan Region are on the NPL, all being military bases in the South Basin. They are: the Marine Corps Logistics Base near Barstow, Edwards Air Force Base, and George Air Force Base.

Over the years, provisions of the IRP have been developed and modified to insure DOD compliance with other federal enactments such as the CERCLA, and the Superfund Amendment and Reauthorization Act (SARA), an amendment to the CERCLA. SARA requires that all federal facilities on the NPL enter into a Federal Facilities Agreement (FFA) with the USEPA. States can also be a party to the FFA but this is not a requirement. The FFA is a site-specific document which defines the USEPA's and the State's expectations as to site investigation and problem remediation. It specifies tasks and compliance schedules, describes a dispute resolution process, and stipulates penalties for compliance schedule violations. In the Lahontan Region, all three military bases on the NPL have signed a FFA of which the Regional Board is a signatory party.

Response Process. All military bases in the State with historical discharges that threaten or have potential to threaten human health and the environment are being cleaned up in compliance with the CERCLA guidelines. The guidelines include a response process consisting of removal, remedial, and enforcement programs. The rigorous response process includes the following actions:

- *Preliminary Assessment*, to determine release sites and the extent of contamination or threat of contamination to the environment.
- *Remedial Investigation/Feasibility Study (RI/FS)*, evaluates all information obtained during the Remedial Investigation (an investigation to fully characterize the contaminant sources requiring remediation), identifies ARARs (Applicable or Relevant and Appropriate Requirements, which

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are numerical constituent limits for cleanup and/or discharge, and other action-, location-, or chemical-specific requirements), compares treatment technologies and recommends a Preferred Alternative for the cleanup operation.

- *Record of Decision*, a document disclosing the cleanup action to be pursued, including ARARs which list the numerical final constituent limits for cleanup or discharge.
- *Remedial Design/Remedial Action*, is the design of the cleanup technology used at the site and the remedial activities to take place.
- *Operation and Maintenance*, is the operation and maintenance of the cleanup activities at the site during the time of remediation.

SARA requires federal facilities with FFAs to comply with applicable state standards in performing remedial actions. Thus, applicable state agencies can be involved in the CERCLA response process regarding ranking, long-term planning, RI/FSs, remedial action selection, and other negotiations.

The Regional Board takes an active role in the response process for the military installations with FFAs to assure that ground water investigations and cleanup activities are completed in accordance with Regional Board policies for the protection of water quality. This is achieved by establishing ARARs, providing input for remedial design and remedial actions, overseeing operation and maintenance of cleanup activities, and conducting inspection of bases to insure compliance with FFAs. Sometimes, however, disagreements will occur between signatory parties of FFAs regarding how and when to achieve compliance. In these cases, the parties enter the dispute resolution process under the FFA to alleviate disagreements and achieve resolution.

Non-NPL Federal Facilities

Another provision of SARA requires federal facilities not listed on the NPL to comply with all state laws for the cleanup of hazardous substances released into the environment. Section 120(a)(4) allows states to pursue all enforcement remedies, including assessment of civil liability against federal facilities not implementing acceptable remedial actions for contaminated sites. Federal facilities, including

military bases, not on the NPL can sign into a state compliance agreement called a Federal Facilities Site Remediation Agreement (FFSRA). This is a document that formalizes a working agreement between the federal facility and state agencies. It establishes a schedule for site investigations and any necessary cleanup, and it provides the enforcement mechanism for commitments not met. As of 1994, one non-NPL military base in the Lahontan Region (Sierra Army Depot) has signed a FFSRA.

As of 1994, the other military bases in the Region (the Marine Corps Mountain Warfare Training Center, Fort Irwin, Air Force Plant #42, and the China Lake Naval Weapons Center) are not on the NPL and do not have FFSRAs. These facilities, however, have sites contaminated with petroleum products, heavy metals, and other pollutants that have led to degradation of water quality. Site agreement (FFSRA) negotiations are in progress for some bases.

Formerly Used Defense Sites (FUDS)

There are six major FUDS in the Lahontan Region, all being in the South Basin. Most of the operations on these now-closed bases were similar to operations on other bases where investigations revealed serious water quality problems. As of 1994, these six FUDS have not been formally investigated by the Department of Defense to determine if contamination problems exist, and if water quality is being impacted or threatened. The U.S. Army Corps of Engineers is responsible for environmental investigations and cleanup of FUDS.

Recommended Future Actions for Military Installations

The Regional Board should continue to work with DTSC and other state agencies to obtain FFSRAs for the military bases in the Region without this document. Having a FFSRA can assist facilities in acquiring funding for remedial activities and insure that progress is made towards achieving compliance with State water quality standards. The agreements can also ensure that cleanup activities at the bases are performed in a timely manner, or that enforcement action will be taken and civil penalties pursued by the Attorney General's office. The Regional Board should continue to monitor compliance at all other bases to insure that

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remediation work is being performed to comply with FFSRAs and FFAs.

The Regional Board should work to see that all FUDS are investigated to determine if they pose a threat to water quality. If water quality is being impacted or threatened at these sites, the Regional Board must ensure that appropriate remediation actions are being pursued by the DOD.